

AMERICAN VETERINARY REVIEW.

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REPORT

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AMERICAN VETERINARY REVIEW,

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ORIGINAL ARTICLES.

REPORT ON THE DISEASE IN CATTLE KNOWN AS "ANTHRAX."

BY PROF. D. McEACHRAN, F.R.C.V.S.

MONTREAL, Dec. 31st, 1878.

SIR.—In compliance with your instructions, I beg to submit the following report on the disease in cattle known by the name of anthrax or charbon :—

The attention of the public is often attracted to a very fatal form of disease occasionally appearing on cattle, causing the sudden and mysterious deaths of several, under circumstances which, in the absence of a correct knowledge of recent pathological investigations, are very apt to lead to the supposition that poison had been maliciously administered.

The disease in question is neither new nor uncommon. It is unmistakably described in the most ancient authentic history, and it occurs at the present day in every country and climate on the globe.

The Dominion of Canada has unquestionably one of the most healthy climates in the world, and that most free from contagious epizootic diseases.

Although anthrax has never at any time during the last sixteen years, or since I have been in the country, occurred to any alarming extent, yet every year sporadic cases, or at least a few animals on isolated farms have been reported, and several outbreaks of it have been investigated by me more especially in the Province of Quebec, and recently in western Ontario.

Appreciating the vast importance of our great cattle interests, and the necessity for preventing unfounded rumors of disease being spread, I respond with pleasure to your instructions to furnish you with an account of this disease, in such a form as may prove useful to farmers and stock owners, by explaining its true nature so far as it is known to scientists.

Synonyms.—The disease is known by an endless variety of names in the different countries or districts in which it occurs, and assuming under different circumstances and in different animals a variety of forms, thereby increasing the number of meaningless and confusing terms which are applied to it. In this country it is best known by the term splenic fever, or splenic apoplexy, and *charbon* or *maladie de sang*, and when it assumes the carbuncular form with localization of the disease in the quarter, it is called "black leg," or "black quarter."

The term anthrax is perhaps not the best which could be adopted, for although to those who have kept pace with the progress of pathological anatomy the name appears quite correct, yet we do not find the disease assume in all cases the eruptive character which is ordinarily associated with the term anthrax. As the terms splenic fever and splenic apoplexy express the disease very inadequately and often improperly, I prefer to use the term anthrax.

History.—In the book of Exodus, 9th chapter, we find a plague sent by God on the cattle of the Egyptians "and it became a boil breaking forth with blains upon man and beast," which undoubtedly was a disease of the same type as anthrax. Mr. Fleming points out a very vivid description of this disease by

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the poet Virgil, which occurred on the Timavus, which involved domestic and wild animals in destruction ; and he also indicates the danger of transmission to man.

"The skins are useless, nor the tainted flesh
Can water cleanse, nor raging fire subdue ;
Nor is it possible to shear the fleece
All saturated with disease and filthiness ;
Nor can the weaver touch the putrid web,
But should a man attempt the odious garb
With burning pustules, and disgusting meat
His limbs offend ; and in no lengthened time
The fire accursed consumes his poisoned frame."

The earliest Greek and Roman writers describe this disease under a variety of titles. As remarked by Bollinger, "After the authors of the middle ages, from the fourteenth to the eighteenth century, had concealed the various forms of anthrax as different diseases under numerous names, it first became known toward the end of the last century that these many-fold diseases were in reality only different forms of the same disease. The most noticeable services in this direction were rendered by Chabert, (1780), who in his monogram joined the similarity of the maladies, which until then had been considered as totally distinct." So great was the interest taken in the disease, no doubt from its prevalence, that this little treatise passed through seven editions in as many years, and was translated into several continental languages.

I am not aware of any records of outbreaks of this disease in Canada having been kept, but in conversing with old people who have lived nearly a lifetime in the country, I find that they have no difficulty in recalling to mind repeated instances in which farm stock have died mysteriously, and which then as now was usually attributed to tonic plants, malicious poisoning, "the evil eye," "elfshot," or "a visitation of Providence."

Nature.—It is a constitutional disease affecting all species of animals, more especially cattle, sheep and pigs, poultry and wild animals, and communicable to the horse and ass by inoculation. In whatever species of animal it occurs it is characterized by the same changes in the blood, but differing in different animals and

in different outbreaks in its outward manifestations. Thus we meet with it in the apoplectic form, in which death occurs in a few minutes without having apparently manifested any observable symptoms; the intermittent form, in which the symptoms are more protracted and intermittent; and the carbuncular or eruptive form, in which, as in black quarter, we have exudations and extravasations of blood of a thin dark color, becoming gangrenous. That this is a blood disease there is now no doubt. The microscope and the science of chemistry have made us familiar with the changes which that fluid has undergone, and the existence of certain organisms (bacteria), whether as a cause or product of the disease is not yet satisfactorily determined, nor do we know for certain whether they are animals or vegetable organisms. One thing we do know, that these organisms are found in the blood in all cases of this disease, and that wherever they are found the blood loses its plasticity, becomes thin and watery, its serum stained with the coloring matter of the corpuscles, and the blood putrefies readily, the poison, whatever it is, seemingly acting as a septic ferment. The blood changes take place with great rapidity, consequently death is sudden and certain in the majority of cases, occurring within forty minutes, without having presented any observable symptoms, the cattle generally being found dead in their stalls.

Causes.—The principal agents which are said to be either the actual cause or the intermediate bearers of the anthrax poison, are certain peculiarities of soil, especially those soils in which there is a large quantity of decaying vegetable matter. As remarked by Bollinger, "An unusual amount of *decaying vegetable matter* in the soil, joined with an excess of *moisture*, appears to furnish the most favorable conditions of life for the poison." Fleming* says "It is most frequent and fatal in regions where the soil contains much organic matter in process of decomposition, and in those in which, while rich in humus, the land is retentive of moisture; in boggy countries, and marshy or swampy districts; and in localities liable to frequent submersion, or in which

*Sanitary Science and Police.

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the surface water cannot escape or is in the process of slow evaporation. The injurious influence of these conditions is increased if the soil contains saline matters, such as sulphates, which favor the decomposition of organic substances. Roll, from this circumstance, seeks to explain the more frequent appearance of anthrax in places where the ground is manured with the aid of mineral matters, as marl, lime and chalk." He further adds, "It is organic substances undergoing decomposition under the influence of the humidity of the atmosphere which furnish the miasma supposed to be the cause of anthrax. A high temperature in favoring the evaporation of moisture from undrained land rich in vegetable matter or from marshes and swamps, and thus exposing a large quantity of organic material, still further accelerates its decomposition, and the products accumulate in the surface soil, the air which the animals breathe and the water they drink, as well as perhaps the food they eat. It would therefore appear, he infers, that anthrax is always due, when it arises spontaneously, to miasmatic infection.

The advocates of miasmatic theory have received many supporters, but a considerable experience of this disease in this country for sixteen years, during which time I have been repeatedly engaged in investigating the disease, has convinced me that these conditions, while they favor the spreading of the poison of anthrax, do not in any instance develop it. The conditions of the soil, the retention of water on its surface, the high temperature are all favorable to bringing to the surface and within reach of the animals pasturing in the field, a poison which may have many years before been buried, or partially buried, in the marshy land. We are all aware that the boggy part of the farm is the place of burial for the dead animals.

Bollinger:—"One circumstance which argues strongly against the miasmatic origin of anthrax is the fact that in this country we frequently meet with the disease during the winter months; as for instance in a recent outbreak of this disease near Sarnia, Ontario, which occurred late in December, when the animals were housed at night and running in the barn-yard during the day, at a time when the temperature was nearly at zero."

Certain conditions of the system are favorable to the reception of the poison when exposed to it. Thus during the summer season a stock of dairy cows were kept in a low damp ill-ventilated byre, in a suburb of Montreal; during the winter they were kept on what may be truly termed starvation allowance. In spring the poor cattle were little better than living skeletons, most of them lousy, many of them being so weak as not to be able to rise without assistance; a number of them died in calving.

The owner rented a large pasture field which had at one time been a burial place for animals, a knacker's yard having been at one time at the end of the field. There had been a large quantity of snow during the winter, and the field being low, lying flat, but not what could be called swampy, the water lay long on it in the spring, which was protracted but was followed by hot fine weather, which produced a rapid growth of succulent grass. A few days after the cattle were put on the field, one or two died suddenly, next day three or four, and in a week about fifteen died, and these the best in the herd.

As usual under these circumstances, poison was suspected, yet the owner did not know any enemy whom he could suspect. Wiseacres accounted for it by a white fox having crossed the field. On being consulted, I at once explained the true nature of the disease. The disease is seen in the same field every summer, and doubtless will continue to occur as long as it is used as a pasture for animals susceptible to the poison.

I do not wish to be understood to consider the anæmic condition observed in these cattle as essential to the predisposition to receiving the anthrax poison; numerous instances have come under my notice in which the animals were in good condition, and apparently in perfect health, but it is certain that reduced vitality renders them more susceptible to the action of the poison.

While it is evident from the results of the most careful investigations into the cause of the disease, the water, the food, or the soil itself may be the active factors or intermediate bearers of the poison of anthrax, it does not originate in them.

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experiments which was carried on at an experimental station established by the Bavarian Government at Langgries, Upper Bavaria, for the special duty of anthrax fever, (Veterinary Journal, page 423,) the founding of the establishment being due to the initiative of Prof. Feser, of the Munich Veterinary School. Although the station was only commenced in September, 1876, the number of experiments that year amounted to no less than 200; these were conducted upon the larger and smaller domestic animals. Seventy-two of these were conducted at Langgries or its vicinity, and the others were conducted at Munich, and were made upon 84 animals: 5 cows, 11 cattle, 35 sheep, 6 goats, 12 dogs, 4 foals, 4 pigeons, 2 rabbits and 5 fishes.

At the commencement of Feser's stay at Langgries, he attentively examined the pastures on which the anthrax fever most frequently appeared, and he discovered so many of the lower organisms thereon, and of such varied characters, that he found it impossible to describe them all; in fact he asserts that the life of a man would not be sufficient to make a complete study of these organisms, the majority of which were of microscopical dimensions. He noticed, however, that nearly all the vegetation on these pastures was charged with rust, smut or moulds of the most varied kind, and that everywhere, even on the most elevated lands, the ground was swarming with *bacilli* or *bacteria*.

It follows from the observations and experiments of Feser, that the *rust fungus*, so frequent in certain countries, and during certain years, has no influence in the production of anthrax. The white mucilaginous mass resembling the honeydew of barley, and which is found every year in the marshes and marshy places of the pastures of Upper Bavaria, infected with the anthrax disease, was more particularly suspected by Feser and especially attracted his attention. The labors of Koch and Cohn amply confirm the suspicions entertained by Feser, for it has been ascertained that the mucilaginous matter is made up of *bacillus subtilis*, the form and development of which are identical with those of *bacillus anthracis*. These marsh bacilli, as well as those of the hay, are in all probability foreign to the causes of anthrax; but because of their analogy to the bacteria of anthrax, a study of them may

furnish useful indications in researches undertaken to fix the character, &c. of the latter. As these marsh bacilli, so like those of anthrax, are developed, multiply and infest damp, hot and marshy pastures, it is admitted as probable that the same happens with the anthrax bacteria, and that the white mucilaginous masses before mentioned, should be suspected as masses of the latter until there is proof to the contrary.

Doubtless the experiments of Feser were suggested by the fact that in Bavaria and elsewhere in Europe, as in this country, in years in which smut is prevalent in the grasses and grains, anthrax is more common in cattle. This has been more especially observable during the past summer (1878), both in Canada and the United States, a great deal of the corn and wheat damaged by smut and rust fungus, concurrent with which was anthrax, has been usually prevalent.

It is reassuring, however, to know that Feser's experiments agree with my own observations, and the testimony of experienced stock raisers in all parts of the country, that smutty corn in the great majority of the instances can be eaten with impunity by cattle and sheep; this, however, does not preclude the possibility that the conditions which favor the development of smut, rust and vegetable spores may also favor the development of the *bacillus anthracis*, and that they may be conveyed to the animals in the hay, corn, other food or water.

Unquestionably, as remarked by Bollinger, "the most active carriers of the poison of anthrax are the diseased and dead animals in all their parts. Most frequently the fluids of diseased and dead animals are to be blamed, blood from blood-letting, blood which in the slaughtering, cutting up and burying of animals, adheres to everything it touches and quickly dries up, then the hides, hair, bristles, hoofs, bones, flesh, secretions, excretions—especially the excrement, all these are to be feared as vehicles of contagion."

The popular opinion which is universal in this and has existed for centuries in this and older countries, that flies during hot weather were active agents in disseminating the poison by feeding on the anthracoid carcass and inoculating both men and animals,

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is also strongly advocated by Bollinger, Davaine and others, both having succeeded in producing anthrax by inoculation made with flies captured on the carcasses of animals dead of anthrax. So general is this idea in the Province of Quebec among the French Canadians, that seldom indeed can one of them be induced to assist at a *post mortem* examination of a dead animal during the fly-season, especially during hot weather.

The following interesting case of anthrax contracted by a fly bite in a horse during the past summer, may be of interest in connection with the subject:

The horse in question belonged to a well known cartage company in Montreal, and was employed in carting green South American hides from the wharf. The weather was warm and flies were abundant and troublesome, causing both the men and horses considerable annoyance.

This horse appeared to have been bitten about half-way down the neck on the left side, about three o'clock in the afternoon. A swelling appeared shortly after about the size of an egg, which gradually increased. The horse continued to work until about half past six, when he was taken to the stable. He was observed to be dull and disinclined to feed. Nothing however was thought of it till next morning, when, not having fed, nor laid down during the night, and the swelling of the neck having increased and diffused, spreading specially downwards, I was sent for. I found the horse standing with hanging head and dull listless expression, made to move with difficulty, breathing quick and short, pulse weak and irregular, counted with difficulty and numbering 60 per minute, temperature 104° ; this was about 12:30 p. m. The swelling was now considerable, reaching down to the shoulder. Scarifications to the part with hot fomentations, diffusible stimulants and acidulated drinks were ordered.

In three hours I was again sent for, but being out, my assistant, Mr. Bureau, visited him and reported an aggravation of all the symptoms and prognosed death within a short time. On my arriving shortly after, I found him down; the swelling extended over the whole shoulder, down the arm and between the fore-legs; it was cold, insensible and emphysematous or crackling; the

breathing was very quick; the pulse imperceptible and the temperature 80° ; after a few convulsive struggles he died.

It must not be supposed, however, that the disease is dependent for its propagation or even its transference to flies except in occasional or accidental cases, it being well known, as already remarked, anthrax is often seen during our cold winter, when we have no flies.

The chief source of anthrax is contagion dependent on the existence of a specific poison in the blood, which once developed possesses great vitality, and is capable, under favorable circumstances of soil, moisture, temperature and exposure, of developing the disease after many years. So active is the poison that Davaine claims to have produced anthrax by the millionth dilution of a drop of blood from a diseased animal.

We might quote numerous authentic cases in which the poison continued to live under various circumstances, and in most unexpected conditions produced the fatal malady. Koch, in speaking of the vitality of the spores, says, let them remain dry for years, in decomposing fluids for months, be repeatedly dried and wetted, still do the spores retain their baneful influence on living animal fluids. Use cotton wool to sooth a burn and perhaps you are applying yourself the seed of the disease that will kill you; bathe in a stream in which they are resting, and a scratch will offer them the way into your system."

Einike (Ziemssen III volume, p 393), relates the following case to illustrate the virulence and tenacity of the poison. The skin of an ox from whose flesh two persons got carbuncle, which died of anthrax in the fall of 1852, was soaked in the following spring in the water of a pond and then made up by the saddler into harness. The saddler got carbuncle. From a flock of sheep which were washed in the pond four weeks later twenty perished in a few days of anthrax, and both of the horses for whom the new harness was made died from the disease in forty-eight hours. The frequent deaths from anthrax, among rag-pickers and wool-sorters in England is another illustration of the vitality of the poison.

On this subject Fleming, "Sanitary Science and Police," says,

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"There can be no doubt whatever as to the contagiousness of anthrax by actual contact or by the medium of contaminated substances. Thousands of observations, melancholy histories, and numerous experiments testify to the fact. The malady has been produced in man and animals through coming in contact either directly or indirectly with the bodies, excretions, debris of diseased creatures, eating their flesh or blood, or the food, herbage, or water contaminated by them by accidental or experimental inoculation, etc. Dogs which have been eating diseased flesh and have soon afterwards bitten other animals, have produced the disease on them by their teeth. Veterinary surgeons and others have been infected through manipulating sick animals while alive or their carcasses after they have succumbed, or by wounding their hands while doing so, and it is not at all infrequent for people to receive the disease from applying the skin, hair or wool of affected creatures to their bodies."

Bacteria and Bacillus Anthracis.—The discovery by Professor Branell, of Dorpat Veterinary Institute, and subsequently by the eminent French veterinarian Delafond, of the presence in the blood of animals affected with blood poisoning (*septicæmia*) both before and after death, of myriads of staff-shaped bodies which have been called *Bacteria*, *Bacteridæ* or *Bacilli*, led to the examination of the blood of animals dying from anthrax, with the result, according to Davaine, of finding bacteria in every case, and that their appearance preceded the morbid symptoms, and that a single drop of blood was estimated by him to contain from eight to ten-millions of these organisms.

Interesting experiments have been conducted by Branell, Delafond, Pasteur, Pollender, Bollinger, Davaine, Chauveau, Papillon, Omnins and others, to which I refer those who wish to study this subject thoroughly. In this paper it will be necessary to confine our remarks and quotations to the most recent facts which have been elicited as deduced from or suggested by the labors of these experimenters.

*The morphological peculiarities of anthrax bacteria may be

* Bollinger (Ziemssen, p. 396.)

characterized as follows :—According to Cohn's recent systematic classification of bacteria, anthrax bacteria belong to the group known as *filamentous bacteria* (desmobacteria) and to the species *bacillus*. The *bacillus anthracis* (Cohn) is closely related to the *bacillus subtilis* (*vitras subtilis*, Ehrenberg) to the butyric acid ferment (*ferment butyrique*—Pasteur.)

Bacilli, such as are almost constantly found in the blood of animals suffering from anthrax, possess the following morphological peculiarities: They are straight—less often, bent, or with obtuse angles—indented, cylindrical rods, of pale appearance, never branched, motionless, generally 0.007 to 0.012 millimetres long, and of a breadth which is hardly measurable; besides these well pronounced filamentous bacteria, smaller transitory forms may be found, although fewer in number, 0.002, 0.003, and 0.004 mm. long, down to the very smallest forms, which cannot be measured, and which, when viewed by ordinary glasses, appear as fine points, while with higher powers they are seen to be spherical bacteria, with all the optical and chemical peculiarities of filamentous bacteria.

Larger bacteria, which exceed the measurements above given, are rarely found, and those of 0.050 mm., as described by Davaine, have been only once observed by me, and then perhaps they were rather to be considered as *post mortem* products. With medium and low magnifying powers the filamentous bacteria appear without joints and homogeneous. With higher powers, and by employing artificial means, causing them to swell by soaking in water, it is seen that the filamentous bacteria are formed of different members, and are, in fact, constituted by a juxtaposition of round or short cylindrical cells.

The isolated spherical bacteria may also be found alone in the blood of anthrax. They grow continually by scission, and as little rows of cells united together constitute the rods (filamentous bacteria) which grow symmetrically at all points by scission. The little rods, which in the fresh state seem homogeneous, after they have been swollen by water and then dried, exhibit an envelope and a plasma.

Anthrax bacteria are distinguished from other bacteria (bac-

teria of decomposition, as found in animal or vegetable infusions, bacteria of sour milk), particularly by the fact that they have a certain symmetry of form and appearance and are devoid of motion. Otherways their behavior with re-agents is exactly the same as that of the above mentioned varieties, and they are noticeable for their great resistance to concentrated acids and alkalies.

Before proceeding to the study of the changes produced in the blood by the presence of these organisms, to enable our non-professional readers, for whom this paper is intended, to understand the nature of those changes, it will be necessary to explain here the structure of healthy blood.

(To be continued.)

DIE AUGENBLENNORRHOE DER PFERDE UND IHRE FORMEN.

(Continued from page 17.)

BLEPHARO-BLENNORRHOE.

The more mild form of the ophthalmic-blennorrhoe is the blepharo variety. It is to be so considered, as it is partly an anticipating process of the severer form, and again as when confined to itself its ravages are far less disturbing to the eye and its embracing appendages. The phenomena of blepharoblennorrhoe present themselves in their severest grade in the course of twenty-four to twenty-six hours, according to the grade of action of the aetiological momenta. The abnormal condition of the eye first presents itself as an excessive lachrymal secretion; further the animal may be observed rubbing the disturbed organ on every convenient object, which is as a rule the first incentive which calls the observer to investigate the questionable eye, and to add to the observation of the consequent changes upon some. The observer must

carefully study the external phenomena thus presented to his view. An eye so diseased is observed to be entirely covered by the superior lid; the inferior, however, also contributes to the closing of the eye during the early stages of the disease. Later, when the disturbance has become well developed, the inferior lid becomes thick and pendulant, and assumes an atropic condition, although the animal seeks in every way to protect the sensitive parts of eye from the action of light, against which it appears to be highly reactive; it lacks, however, ability to close the inferior lid, the contumescent condition of the same offering a sufficient obstacle to all movements; the disturbance of the lid from the bulb being entirely influenced by the degree of tumefaction present. The superior lid presents an important convexity, as if the bulb itself were hypertrophied or exophthalmus were present, but on more intimate inspection we find the cause to consist in an excessive inflammation of an hyperæmic exudative character. The exterior contour of the eye presents phenomena indicating the various insults received from rubbing, &c. These phenomena might lead one to assume that he had to do with a case of blepharitis traumat, which would be wrong, as they are simply indicative of the excessive cutical irritation present, and the attempts of the patient to relieve the same. The canthus externa and interna are filled with a yellowish viscid muco-purulent mass, the cilia connected together by the same. The lacrymal secrete is very profuse and causes excoriations as it flows along the face. These superficial phenomena have been the cause of many diagnostic mistakes, for if we enter into a more profound investigation of the diseased organ, we shall find before us not only an excessive conjunctivitis palp, but also conjunctivitis total. The same is in a swollen injected tumefied condition, circumscribed hæmorrhages make themselves evident. The cornea is very much swollen and photophobia excessive. This active inflammatory condition continues from one to six days, the infiltration of the conjunctive palp, and its continuations constantly increasing, the lacrymal secrete becomes more and more profuse, the exudate more viscid and purulent. If we study the conjunctiva in its entirety more closely, we shall observe on its surface, especially the superior portion on the limits

where the same passes into the conjunctive palp, a large number of small, firm semi-pellucid, greyish or greyish-yellow eminences projecting above the surface of the membrane, which in form present a strong resemblance to the ovula of frogs; the same appear to be situated between the strongly injected vessels of the conjunctiva. These small bodies may either be limited to the named portions of the membrane or distributed over the whole surface of the same, either singly or in groups, yet the posterior portion of the conjunctiva bulbi seems to be the primitive point of development. The conjunctival exudate appears as a yellowish-white, non-opaque viscid mass, which accumulates mostly on the inner surface of the conjunctive palp. The latter is here and there exceedingly infiltrated, and the lid itself tumefied; the conjunctiva presents a copper-like appearance where exposed to external influences. If the inflammation is still active, the eye and its surroundings feel excessively warm to the hand, and so long as this continues the exudative processes continue in full profusion; as the inflammation begins to lessen in intensity, the palpebral-intumescenz gradually loses itself, and the pruritus to diminish and finally disappear, the patient demonstrating the same by less and less inclination to rub the afflicted parts. The photophobia also decreases, the patient gradually opens the lids, the turgescence of the vessels diminishes, and the conjunctive palp remains more or less thickened, injected, its surface somewhat uneven, and the portion between the conjunctive palp and bulbi marks itself by its swollen condition, the lids do not place themselves in normal opposition with the bulbus. On close investigation of the now approachable cornea, we may frequently observe small excoriations of its epithelium, and the conjunctival sack still secretes more or less of a viscid, muco-cellular mass. The inflammatory action has only presented us an intermission in its course, an excessively irritable condition continuing, which at the most insignificant moment may give occasion to further progress in the disease. If the necessary conditions to recovery are, however, present, in 10 to 14 days the injected condition of the conjunctiva still more disappears, the secretion diminishes, loses its cellular character, but is still viscid and flocculent, the infiltrated condition gradually disappearing,

the secretion becoming more and more normal, until finally attaining its normal grade. These are phenomena accompanying a favorable course of blepharoblennorrhœ; also, such is seldom its course. As a rule the disease causes profound disturbances of a part or the whole of the visual apparatus, leading, in most cases, to loss of sight when we are not able to check the inflammation before attaining its full development.

The lethality of the blennorrhœic processes are of themselves not so important—yes, might be even said to be insignificant, were it not for the severe corneal complications, and those of the profoundly situated visual apparatus, which present themselves in the course of the disease.

The consequences of an excessive inflammation, such as clouded cornea, cicatrices in same, phthisis of cornea, pannus, synechia of the iris, corneal staphiloma, and phthisis bulbi, give evidence of the severity of the same. All these conditions come to pass more or less as complications, and in concrete connexion with the primary disturbance, at one time combined with the blepharo, and at another with the ophthalmo-blennorrhœ, all combined representing the characteristics of the disease. By blepharo-blennorrhœ the processes extending very easily to the cornea, in most cases a large lenticular or semi-lunar or roundish portion of the cornea, generally in its periphery, being the seat of the affection; this same is at first more or less diffuse, but in a day or so its limits become more marked, it begins to degenerate, softens, and finally becomes transformed to a puriform mass. By means of these processes is generated an ulcerous surface with greyish-yellow ground and peripheries, and in inclination to complicate the deeper seated elements of the cornea. These ulcerated spots give way to a conformable treatment, notwithstanding the purulent, infiltrated condition of the elements immediately adjoining, leaving cicatrices frequently in the cornea, in some cases prolapsus iridis; frequently, small, circumscribed, sero-lymphatic effusions remain, which are frequently accompanied by vascularization. Idiopathic intracorneal effusions, sometimes quantitatively insignificant, may be observed as further complications; in other cases, atelectasis of the corneal

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vessels may be observed, followed by moderate exudation-pannus. The intra corneal exudat, when circumscribed, gives rise to keratitis apostematosa; the pus from the same either suffers metamorphosis and absorption, or penetration of the cornea takes place. Cicatrization of the corneal ulcers—keratitis ulcerosa—sometimes takes place, or penetration and prolapsus iridis comes to pass.

A very frequent complication is the development of bulla and pustulæ upon the cornea, which either suffer resorption or rupture, giving occasion to prolapsus iridis. Non-transparency of the cornea from coagulated exudate, deformity of the iris, cloudiness of the corpus vitreum are frequent occurrences, while cataract comes only seldom to observation.

OPHTHALMO-BLENNORRHŒ.

This disturbance attained quite a notoriety for its pest-like eruption among the horses of the French army invading Egypt in 1798, and received the name "*Ophthalmie militaire contagieuse*." Later investigations demonstrate the same to be nothing more than an excessively severe form of blennorrhœ. My experience leads me to consider the same as a most threatening disease of the eyes of the horse. Shortly consequent to the action of the irritant, oft within a very few hours, the most extensive complications of the eye appear which previously seemed entirely healthy, but the blepharo-blennorrhœ, which continues for a longer or a shorter time, may suddenly be observed to have become generalized to an ophthalmo-blennorrhœ or ophthalmia. If we carefully review the various veterinary ophthalmic works, we find many pathic processes described which bear more or less relation to ophthalmo-blennorrhœ; Strauss, Hertwig, Haubner, Veith, *et al.*, all describe phenomena of the same, and describe the pathic processes with varying exactness, yet never as an ontogenetic disturbance, but always as a participating phenomenon of different internal and external complications of the eyes. This circumstance has undoubtedly given occasion to many diag-

nostic errors and complications. Both ophthal- and blepharoblennorrhœ seem to have been frequently observed, but always looked upon as belonging to the so-called ophthalmia specifica, or as keratitis ulcerosa. J. E. Veith seems to have described the complications in question under the name of ophthalmia equi periodica, but complicated it with amaurosis, the so-called specific ophthalmia, and other disturbances. I have, however, no doubt that every reflecting professional will have no difficulty in seeing the distinction between the disturbances we are now considering and those of *irido-choroiditis recidive*—the so-called periodic or specific ophthalmia.

The phenomena of ophthalmo-blennorrhœ or ophthalmia are as follows: As already mentioned, the most extensive complications soon follow the irritations phenomena. The external circumference of the eye become swollen and the already mentioned traumatic lesions are to be seen. The inferior lid is much swollen. An ill-colored reddish secrete flows from the eye; the lids are only to be separated with difficulty. The cornea is very glowing, and its peripheries marked by their highly swollen condition. More intimate investigation of the complicated eye reveals the presence of particles of straw, hair, etc., within the conjunctival sack, introduced therein by the rubbing of the patient. Within 6 to 12 hours a flocculent, purulent exudate may be seen flowing profusely from the eye. As the disease progresses, the cornea becomes clouded, uneven on its surface as if strewn with fine sand; finally, the corneal disturbances assume a rather triangular form, with the basis on the periphery of cornea.

By many severe cases the cornea becomes swollen to a veritable pustulous mass, which soon bursts, giving rise to an extensive keratitis ulcerosa profunda. In such cases the eye is lost unless energetic measures are at once introduced. If the tumefaction of the lids relaxes somewhat, as well as that of the cornea, then it becomes possible to gain a better view of the intra-palpebral disturbances. The conjunctivæ are highly hyperæmic, almost copper-colored, tumefied, and uneven. The previously-mentioned granulations may be seen upon the surface of the mucosa in great profusion, the spaces between them being taken up with a fibri-

nous pseudo-membrane. If the inflammation recedes still more, we find the conjunctival surface covered with a yellowish exudate, which in course of the disease becomes transformed to a purulent, flocculent mass. An excessive keratitis is always present. Sphacelus corneæ is a frequent complication by this disease, which seems to indicate the highest grade of the same. The further changes have already received consideration when speaking of blepharo-blennorrhœ. The latter may sometimes come ontogenetically to development, without leading to the more severe disturbance, while the ophthalmo-blennorrhœ is characterized by the acuteness and severity of its eruption and the severe lesions which it leaves behind. Trochoma of the conjunctivæ deserve our further attention. An idiopathic eruption of the same, as observed by mediciners, has not come to my notice, they only appearing as an accompaniment of blennorrhœ, being one of the chief characteristics of the same.

THERAPIC.

Before I became thoroughly acquainted with the very malignant character of the disturbances in question, I had made experiments with about all the medicaments recommended for such, and as a rule, received only negative results. Argent. nitricum has proven to be the most active combatant in my hands. Cuprum sulfuric also gave positive but far less satisfactory results. At present the lethally ending cases in my practice do not exceed ten per cent, which is a very favorable comparison with all former attempts at treatment. As soon as we have correctly diagnosticated the presence of a blennorrhœ, it matters not which form, our first duty is to ascertain the dignity of the disturbances which have thus far been produced. If the disease is limited to the conjunctivæ, and the cornea uncontaminated, the trochoma deserve our first attention; they are frequent difficult of diagnostiation when excessive inflammation is present. In such cases one can help himself with a small hand-glass. These granules, as well as the entire conjunctival surface, without regard to the grade of the disease, must be intensively corroded with Ag. NO₃. This must take

place, although gangræna threatens. The entire conjunctival sack must be subjected to this treatment, regardless of conditions present. In consequence of the combination of the silver with chlor. and albumen, the corrosion is soon followed by the formation of a thin membrane on the surface of the conjunctivæ, and a profuse lachrymal secretion. By this means a part of the dissolved salts is worked away. The eye must now be washed with a previously prepared solution of Na. Cl. in order to completely neutralize any remnants of the Ag. NO₃. The eye must now be antiphlogistically treated with ice, for the next twelve to eighteen hours. If the inflammation does not relax, the same must be continued longer. If the inflammation has mostly disappeared and there are still to be seen exudate-masses on portions of the conjunctivæ, the same must be treated as before with Ag. NO₃, Na. Cl. and ice-cataplasms. Such a course soon overcomes the inflammation, the infiltration and exudate disappearing and the eye returning in a short time to its normal condition. Sclerotic or swollen places on the conjunctivæ, often remain without interfering with the sight. The conditions are not so favorable when the cornea is also complicated. In such cases the same treatment with Ag. NO₃ must be at once introduced, and the ulcerated places carefully pencilled. Ice-cataplasma must also follow.

Cases come to pass when the cornea seems almost destroyed, and the eye as apparently lost, yet even in such we must not neglect to use the Ag. NO₃ repeatedly and perseveringly, but with due precaution until cicatrization appears. In such cases, one must always observe the condition of the conjunctiva. Frequently improvement begins after the second, and in some cases after the first corrosion, and the eye recovers in two or three days. In other cases, the condition is more obstinate, and the disturbances more excessive, and we are necessitated to resort to the corrosive ten or twelve times. One must endeavor to prevent, as far as possible, the clouding of the cornea; but I must especially emphasize, that it is highly disadvantageous to waste time in combatting the same, in the hope that the inflammation will relax, for before that time, the intra-corneal exudate would have coagulated.

Our best course is to combat the clouded cornea some hours after the corrosion has taken place, although at the same time the application of the ice must also take place. To the above purpose I have found Hg. O to be the best means; but we must not use the same until three or four hours subsequent to the application of Ag. NO₃. In such cases, when photophobia remains after disappearance of the inflammation, an application or so of Ung. hyd. cin. comes well in place. The above is the only method of treatment which we find worthy of recommendation.

EDITORIAL.

PLEURO-PNEUMONIA.

How much our foreign trade in cattle may be affected by the presence of epizootic pleuro-pneumonia in some of our Eastern States, is a problem which time only will solve, but which depends much on the successful execution of the sanitary measures which have been taken in New York, New Jersey, Pennsylvania and other States where the disease is *known* to exist.

For those amongst us who know the disease, who have seen it here and abroad, who have witnessed post mortem examinations, who have followed the history of many well authenticated cases, there is no doubt that epizootic pleuro-pneumonia exists in different States, and less doubt that if not checked in time, it may extend over our vast continent.

However, as shown by a card reprinted in the February number of the REVIEW, there are in New York a few who deny the existence of that disease, even in that most important and dangerous of centers of infection at Blissville, L. I.; and though the statement then made was to a certain extent contradicted by a letter which we printed in our March number, one of the incredulous wrote to the *Medical Record* a letter attempting to show the error which was committed by the majority of the veterinarians, who had visited and seen post mortems at Gaff, Fleischman

& Co.'s. Prof. Law answered that letter, and both of these will be found in toto in this number of the REVIEW.

Lesions found at post mortem are said to be characteristic of the disease, and the question at stake, whether or no those found at Blissville or in the other animals killed by the authorities since, were the true lesions of contagious pleuro-pneumonia, seem to be the problem which European authorities were called upon to settle.

A letter said to have been written to an *eminent American pathologist* (?) by Prof. Williams has been published, which tends to criminate the diagnosis made by Profs. McEachran, Law and others, besides ourselves, and to show that after all, all the writings, reports, orders and sanitary measures were all useless, as no contagious lung disease existed here.

Prof. Law, though much pressed by the work which has been placed in his hands, and which he carries with so much energy, and whose result will never be forgotten, still finds a moment to answer Prof. Williams. These we print also.

Now, as we desire to be charitable towards every one, it seems to us that this letter of the eminent professor of Edinburgh has been written by him without a thorough acquaintance with the *truth*, and that he has been misguided by *one* who has *never* been present, as far as we know, at any of the post mortems made either in Long Island or any other place by order of the officers appointed by the Governor of our State.

It is with much regret that we find Prof. Williams in the equivocal position where he has placed himself in relation to the Blissville cattle, as stated in his letter, for this is taken as a powerful argument by the few whose interests it serves, and with which they are trying to save themselves from an ignoble drowning. In such a professional position and standing as the one held by Prof. Williams all over the English speaking world, an erroneous statement is not excusable, and for this reason ought not to have been made without thorough evidence of its correctness.

Whether the Ontario cattle had epizootic pleuro-pneumonia or not we do not pretend to say. The professional standing of the Professor ought to be sufficient guarantee of the certainty of his diagnosis, though we understand he was the only one among

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the veterinarians who saw these cattle, who denied the lesions to be those of pleuro-pneumonia. But what is the connection between the Ontario and the Blissville cows, we fail to see: except it is to save the opponents to the measures taken by the State governments.

Nevertheless, as we cannot bring ourselves to the idea that Professor Williams has written the letter knowingly, we feel it our professional duty to make room for a report of the post mortems made in Long Island, where the State Commissioners were present with many invited witnesses, among which were the gentlemen who sign the card published in our March number, as well as the author of the letter to the *Medical Record*, but not the *pathologist* referred to.

We now expect from Prof. Williams an answer to the queries: Are the lesions described by Prof. Holcombe characteristics of contagious pleuro-pneumonia, and did the animals who presented them suffer from that disease? and, if not, how is it that they so thoroughly agree with those which he described in his work on Practice?

For us the faith and confidence of Prof. Williams have been deceived, and we are too glad to give him an opportunity to acknowledge it.

VETERINARY HONORS.—Among the graduates of the Bennett Medical College, for the degree of M.D., is found the name of Mr. N. H. Paaren, the well known veterinarian of Chicago, of the editorial staff of the *National Live Stock Journal*. One more M.D. among American veterinarians.

PLEURO-PNEUMONIA.

REPORT OF THE CATTLE COMMISSIONERS OF MASSACHUSETTS RELATING TO PLEURO-PNEUMONIA IN 1863.

(See page 30.)

COMMONWEALTH OF MASSACHUSETTS.

To the Honorable Senate and House of Representatives :—

The Commissioners on Contagious Diseases of Cattle, in their annual report stated that the disease (pleuro-pneumonia) had not a visible foothold in Massachusetts, not a case having been presented since August last; but on Wednesday, February 11, 1863, their attention was called to a sick cow in Waltham. On examination, pulmonary disease was apparent; and on inspection of the other cattle in the herd, another cow was found to be suffering from loss of appetite and difficult respiration. Both came from Brighton market about five weeks previous.

The first mentioned cow died after a sickness of about ten days. The autopsy revealed the peculiar characteristics of contagious pleuro-pneumonia in the acute form. The other cow, after a sickness of four weeks, being unable to rise, was killed, and on examination of the lungs these presented the appearances common to the disease in its more advanced condition, exhibiting the diseased lung tissue in an encysted form. Both of these animals had been removed from contact with the rest of the herd, consisting of twenty-one head, yet on examination yesterday, March 25, two more exhibited, in a marked degree, the early symptoms of pleuro-pneumonia.

Whether the disease in the present case came from other States, where it is known to exist, or from some secret hiding-place in this State, is not known, and on account of the immense traffic in cattle it may be difficult to ascertain; yet the Commissioners believe that, with the hearty co-operation of all cattle owners, it can be controlled here, and it is deeply to be deplored that other States where the disease exists do not adopt similar measures with ours for its extermination, for, should it extend to the vast herds of cattle in the western country, the losses would be incalculable.

In view of the foregoing facts the Commissioners recommend that the Legislature appropriate the sum of \$5,000 to meet the present exigency and such as may arise during the current year.

Respectfully submitted.

E. F. THAYER,
For the Commissioners.

BOSTON, March 26, 1863.

COMMONWEALTH OF MASSACHUSETTS.

To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts.

The Commissioners on contagious diseases of cattle, in their Report of January, 1863, stated that there was not then a visible case of the disease called pleuro-pneumonia existing in the State. In February following, they were called upon to visit supposed cases on the farm of Wm. P. Childs, in Waltham, and subsequently communicated the results of their investigations to the Legislature, stating that they were unable to trace the origin of the disease in that herd. It was afterwards ascertained that the disease had existed in Lexington, "in a secret hiding-place," for several months previous.

The course taken was first to isolate the herd of cattle in Waltham, after which active measures were taken to discover the origin of the outbreak. The dealer, of whom Mr. Childs had purchased cattle, denied having any reason to suspect the existence of the disease in his herd, consequently the markets where the cattle were purchased were visited, and when no traces of the disease could there be found, it was feared that all efforts to control the malady would be fruitless.

Several weeks elapsed before it became known that other herds were infected, and that many animals had perished from the disease.

The expenses already incurred having exhausted the appropriation of \$1,000 made by the Legislature, report of the fact was made to the executive department, the opinion of the Attorney-General of the Commonwealth was taken as to the individual liabilities of the Commissioners, the result of which was the stopping of all further proceedings, and the resignation of the Commissioners.

To eight herds, in which there was satisfactory evidence that the disease existed, it was ascertained that the infection was communicated by cattle purchased of the dealer before alluded to as having denied the existence of the disease in his herd, and in most cases, the cattle purchased of him were the first attacked.

It was estimated by the Commissioners in May last, that the expenditure of \$3,500, in addition to the appropriation of the Legislature, would have arrested the disease at that time. Satisfactory evidence is now at hand that it will require \$10,000 to cover the loss since sustained by State, towns and individuals, in consequence of leaving the disease to take its course.

In several instances, where the disease has broken out, the owners of cattle have disposed of them without calling upon the authorities for recompense, and if all the cattle that have been exposed to the disease, had been disposed of in such a manner as not to endanger others, doubtless no one would complain. But the character of this disease is so insidious that it is impossible for owners, or any one else, accurately to determine the existence or non-existence of the malady, and cattle may be disposed of in such a manner as to carry the contagion to many herds; hence the necessity of most stringent measures for arresting the disease at the outset. To accomplish this effectually, there should be in existence an active board of Commissioners. The result of leaving the matter to the

local authorities of towns has been disastrous. This is owing, in great part, to the circumscribed action of such local authorities. They cannot reach the source of the disease. By the statute, the Commissioners have full power to visit any locality in the State, and require any persons to testify under oath as to their knowledge of the existence of pleuro-pneumonia in their vicinity, hence the fear of detection and punishment deters many from sending cattle that have been exposed, to the public markets to be sold; but as selectmen can only act within their own municipalities, such cattle can be sent beyond the town limits and sold without restraint.

If no board of Commissioners be appointed, and no active measures are to be taken by the State to prevent the spread of the disease, then it would be important that all laws relating to payments for infected cattle slaughtered should be repealed. Otherwise an unprincipled owner may sell a cow, infected with the disease, into a herd of sixty or more, and the owner of the latter may, when his cattle are taken sick, call in the authorities, and the town and State will be obliged to pay large sums of money, without thereby effecting any thing towards the arrest of the disease.

The importance, as a sanative measure, of checking the spread of a contagious malady like this, has never been considered here as it should be. In England, where the trouble has become wide-spread, through inattention and neglect, active measures are now being taken to counteract the evil. There strenuous efforts are made to prevent the sale of diseased meat, a business of great extent in that country, and which has just commenced in this. The effect of selling the meat and milk, in that country, of diseased cows, is now known and felt, and even perceptible in its vital statistics. It will be so here, unless prompt and efficient action is taken to prevent it.

Respectfully submitted,

JAMES RITCHIE,
E. F. THAYER,
HENRY L. SABIN,

Late Commissioners on Contagious Diseases of Cattle.

BOSTON, December 9, 1863.

To the Honorable Legislature of the Commonwealth of Massachusetts:

Chapter 138, section third, of the General Laws of 1862, provides that "Cattle Commissioners, now or hereafter appointed, shall keep a full record of their doings, and report the same to the Legislature on or before the tenth day of January in each year, unless sooner required by the Governor."

The undersigned received an appointment as one of the board of Cattle Commissioners, dated June 3, 1863, and was qualified under the same June 17, following. So far as he has learned, no additional Commissioner has been qualified. Under these circumstances, having had no authority to transact any business relating to the Commission, no report can be made. It is, however, proper to state that official notice was received from the selectmen of the following named towns, bearing the dates annexed, of the existence of pleuro-pneumonia within their several limits, viz:—

Lexington.....	June 15.	Holliston.....	July 21.
Hingham.....	July 4.	Ashland.....	Aug. 6.
East Marshfield.....	" 16.	Natick.....	" 25.
Sherborn.....	" 17.	Waltham.....	Sept. 3.
Dover.....	" 20.	Northborough.....	" 22.

Not having authority to give official aid in any of these cases, the undersigned has rendered what assistance he was able in answering repeated and urgent calls for advice.

It would seem eminently proper that if the Commission is to be continued, the vacancies therein should be filled without unnecessary delay.

Respectfully submitted.

JABEZ FISHER.

FITCHBURG, January 8, 1864.

CORRESPONDENCE.

THE LUNG PLAGUE.

NEW YORK, April 2, 1879.

To the Editor of the Medical Record :

DEAR SIR.—In the number of the *Record* for March 29, on page 303, an editorial on the lung plague appears that is not, in my opinion, in keeping with the views entertained by "leading members of the veterinary profession in Europe" or our own country. The present scare about pleuro-pneumonia in cattle is certainly unwarranted. During the winter months simple lobular pneumonia, and occasionally circumscribed pleuritis as a complication, is a common disease met with in cattle where large numbers are kept near large cities for dairy purposes. The animals are packed together in small space, the ventilation imperfect, and they are exposed to extremes of *heat and cold*, by opening and closing of doors communicating directly with their apartments. I examined the animals at Blissville on three separate occasions, in connection with several veterinary surgeons and medical gentlemen well acquainted with the history and pathology of the disease in Europe, and we were agreed that

contagious pleuro-pneumonia *was not in existence*, and *we so reported*. Our report, *at that time* in the *minority*, has been reinforced by the post mortem and microscopic examination of sections of the lungs taken, and lately by a letter to Prof. Smith, of Toronto Vet. College, from Prof. Williams, of the Edinburgh Veterinary College, who witnessed one hundred post mortems of the American cattle slaughtered in Liverpool, said to be suffering from contagious pleuro-pneumonia. Williams reports that they suffered from *simple pleuro-pneumonia*, which was non-contagious.

In *my experience* the incubative stage does not extend from one to sixteen weeks. During an enzootic of pleuro-pneumonia confined to the lower part of Westchester County, in the years 1875-'76, I received and treated 360. In some cases in cattle the incubative stage was short. On one farm, in a dairy of 80 cows, three days after purchasing some cows from a drover, the invasion of the disease occurred, ushered in by a chill (rigors); elevation of temperature, thermometer registering 102° to 104° F.; respiration increased in frequency and became spasmodic in character and abdominal; nostrils abnormally dilated; visible mucous membranes infected; suppressed cough; loss of appetite; the flow of milk arrested, and, in the majority of cases, entirely suspended until convalescent. Auscultation and percussion reveal abnormal sounds peculiar to disease of the respiratory organs. Convalescence sets in on the seventh or eighth day, and is completed in a majority of the cases on the twenty-first day. Under appropriate treatment 85 per cent recover. Such is my record; and in my opinion cattle that have passed through an attack are better suited for dairy purposes in an infected district than fresh stock. In experimenting with milk of diseased cows fed to calves, I have failed to produce positive results. At Blissville the mortality from the disease was slight. The majority of the animals were slaughtered, and sold in the market as beef. This is not in keeping with a malignant disease *theory*. Again, in conversing and corresponding with veterinary surgeons and stockraisers, in various parts of the country, I have as yet failed to discover the innumerable quantities of animals affected,

as reported in the daily papers. In conclusion, I sincerely hope that an appropriation will be made to study the best possible means of guarding against outbreaks of disease, but not for that antediluvian method, the stamping-out process.

Respectfully yours,

R. W. FINLAY, V. S.,
No. 134 West 124th Street.

PLEURO-PNEUMONIA IN CATTLE.

DEPARTMENT OF HEALTH, 66 COURT STREET,
BROOKLYN, APRIL 14, 1879. }

To the Editor of the Medical Record:—

SIR: Your correspondent, R. W. Finlay, impeaches the State authorities, charged with the exterminating of the *bovine lung fever*, with mistaking *simple pleuro-pneumonia* for specific diseases in question. His charge would be a serious one if founded on a substantial basis; but as it is, it is difficult to correctly characterize the statement which he advances in the name of an argument. The cattle in the *Blissville distillery stables* were not affected with *contagious pleuro-pneumonia*, because Prof. Williams, in opposition to Professors Duguid, McCall and Walley, pronounced that steers *shipped at Portland, Me.*, were not so affected. If Mr. Finlay has any private information, showing that the cattle shipped on the *Ontario* from *Portland, Me.*, were taken from the Blissville stables, it will go far to settle the question as to the nature of the disease about which the professors differed at Liverpool. If he has not, perhaps he will kindly enlighten your readers as to the possible connection between the cattle shipped at Portland and those in the Blissville stables.

"Veterinary surgeons and stock-raisers in various parts of the country . . . have failed to discover the innumerable quantity of animals affected, as reported in the daily papers." Mr. Finlay is welcome to his empty honor of demolishing this man of straw, for whom the State authorities are in no sense responsible. The disease exists in a comparatively limited area on the Atlantic seaboard, and its extinction here is a possible and comparatively

easy task, while the neglect of it means the greatest injury to the future live stock interest of the country.

"At Blissville the mortality from the disease was slight. The majority of the animals were slaughtered and sold in the markets as beef. This is not in keeping with a malignant disease theory." If Mr. Finlay and his colleagues had been "well acquainted with the history and pathology of the disease in Europe," they would have known that this is precisely the European record of this disease.

In large cities of Great Britain and the Continent, it is altogether exceptional for a cow to die of pleuro-pneumonia. The dairymen purchase mainly cows in good condition, and when the first symptoms of the malady are shown, they send them to the slaughter-house for beef. It is a common remark with them that they would get rich if they could only keep the cows alive for three months after purchase. But to return to the Blissville stables. Between the time of the first examination by Professors McEachran and Liantard and Mr. Gadsden and the establishing of quarantine, nearly 300 cows had been removed from these stables for slaughter or otherwise, so that comparatively few *diseased cattle* were left. Yet, of the 600 that remained, we had to send 24 to the offal dock, and about 150 more, slightly affected, went to the Johnson Avenue slaughter-house. In other words, we slaughtered and furnished indemnity certificates for over one-tenth of the animals left after the disease had been weeded out, to the best of the owners' knowledge; while, by adding those in which traces of the malady were found, we had a grand total of nearly one-third of the entire stock affected. It will, perhaps, puzzle Mr. Finlay to find another such record in the history of the disease.

Mr. F. cannot claim any necessary ignorance of these facts, as this thing was not done in a corner, and every facility was afforded to himself and colleagues for examinations and autopsies on any condemned animals they might select.

It would be easy to multiply cases showing the contagious nature of this affection in and around Brooklyn and New York, but I shall not encroach on your valuable pages further than to

mention one or two instances of its conveyance to county districts, where the source of the malady could be undoubtedly traced.

Mr. Wheelock, of Roslyn, L. I., bought two cows from a New York dealer. They sickened soon after, infected the rest of his herd, and six were lost before the plague could be stayed.

Mr. Kenyon was so satisfied it was not contagious that he purchased and took home two of Mr. W's. cows. One of these sickened and died, and infected several of his herd, one of which had to be destroyed to prevent the maintenance of the contagion.

Mr. Post of Westbury, L. I., purchased a cow from a passing herd, said to have come from a swill stable near Brooklyn. She infected his herd and his brother's, and, after heavy losses, they found it needful to kill all the survivors, and begin anew with fresh stock. Mr. Gilbert Miller, of Katonah, Westchester County, took in a Jersey cow, sent from Mott Haven as a present to his son-in-law. Three months later his herd was generally infected, and the Jersey cow and two others more out of six died.

Mrs. Robertson's herd, occupying a piece across the road, suffered from the disease three months later, and five out of twelve died. Mr. Collins, Fiftieth street, New York, had a Jersey cow sick with a sporadic (?) disease of the respiratory organs, from which she recovered under the care of a veterinarian. Her calf was sent to the farm of Solomon Mead, of Greenwich, Conn. The calf sickened and died in a little over two weeks after arrival, but infected the whole herd, five of which had died up to the time of my visit.

One of Mr. Mead's cows broke out and went into the herd of Mr. Griffin, and at the time of my visit Mr. G. had lost one and had two sick.

These are examples of what we meet with every day. If Mr. Finlay can see this disease without tracing similar channels of contagion, I fear that his blindness must be wilful.

I cannot conclude without a reference to Mr. Finlay's sneer at the "stamping out" of the disease. The most superficial acquaintance with the history of the malady would have shown him that this is the only successful method of dealing with this and other fatal contagions of animals.

The method was inaugurated in England in the early part of the eighteenth century by advice of Mr. Bates, surgeon to the Royal Household, for stamping out rinderpest. It was again successfully adopted in the middle of that century to root out a new importation.

It was a third time put in force in 1866, and a fourth in 1877, to suppress invasion of the same plague. It was repeatedly resorted to to cut short ovine variola on English soil, and it is now being put in force against the lung fever. On the Continent of Europe it is now recognized as the only economical and effective mode of dealing with rinderpest, and the following countries have successfully resorted to it for the extinction of the bovine lung plague: Switzerland, Mecklenburg, Oldenburg, Schleswig-Holstein, Denmark, Norway and Sweden and the plague-stricken Holland herself is now putting it in practice. In America it has been repeatedly successful in Massachusetts and Connecticut. It is doubtless possible to surround patients and these products with disinfectants, to secure a certain percentage of recoveries, and let the malady expire by its own self limitation, but the expense of such a course would far exceed the value of the animals saved, and when attempted on a large scale, over half a dozen different states, it would be subject to incessant lapses and failures, and would thus become a means of spreading the disease. All sanitarians must admit that method is the best which will most speedily and effectually extinguish the poison, and do this at the cheapest rate. All of these conditions are met by the *stamping-out* process, and whatever retards or hinders this is essentially unsanitary and wasteful. Into the domain no moral question intrudes; it is a purely pecuniary question, and if it could be solved by the slaughter, not of the sick only, but of all the cattle in the infected districts, it would be a much more economical course than to allow the malady to spread till it reaches our open Western ranges, where all attempts at *stamping out* would only repeat the disastrous failures of the steppes and of the unfenced African and Australian pastures.

Yours &c.,

JAMES LAW.

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PROF. WILLIAMS ON PLEURO-PNEUMONIA IN THE UNITED STATES.

THE NEW VETERINARY COLLEGE, }
GAYFIELD, NEAR EDINBURGH, March 29, 1879. }

MY DEAR SIR.—Thanks for your card and slips of New York papers duly received. Since first arrival of Ontario with cattle, others have arrived in Liverpool, and I have examined the lungs said by Privy Council Inspectors to have pleuro-pneumonia, and satisfied all who have seen them that no pleuro-pneumonia has arrived here from America; indeed, everybody is surprised that such a gross mistake should have been made. The last lot—seven in number—examined by me had bronchitis, with collapse of the lung, but not a trace of pleurisy nor of pneumonia, yet they were declared by the authorities in London to have typical pleuro-pneumonia. I have the specimens most carefully preserved and am ready to show them to the whole world, and his wife, if necessary.

I should think that the lung-disease at Blissville is something very different from pleuro-pneumonia, as it is stated in the report you sent me that “the diaphragm was covered with extensive congestive spots,” a state of that membrane not known to be associated with pleuro-pneumonia constituted as it is here. I shall be very glad to learn all about the matter, as it is of present importance, not only to America, but to this country, that there should be an untrammelled trade in stock.

Accept my best thanks for your kindness upon this and many other occasions. With kind regards, yours faithfully,

W. W. WILLIAMS.

R. LAIDLAW, Esq., V. S., Albany, N. Y., U. S. A.

45 WEST 29TH STREET, NEW YORK, }
APRIL 20TH, 1879. }

To the Editor of the Times :—

SIR: Under the heading of “The pleuro-pneumonia scare,” I find in your columns a paragraph claiming that the cattle disease

in this vicinity is not contagious pleuro-pneumonia, and adducing the evidence of "The New York College of Veterinary Surgeons" and of Professor Williams in support of the assertion. To those unacquainted with the facts, the array of *apparent authorities* may doubtless have some weight, and as the acceptance of the doctrine might hinder the work of exterminating the plague, some notice seems to be demanded, and I crave the boon of making the needful rejoinder through your valuable columns.

Any one, even though he may be an unprofessional man, if he can appreciate the relation of cause and effect, may soon satisfy himself that we are dealing with a *contagious* disease. He has but to make a tour of a few cow stables in New York City and vicinity, but especially in N. J., wherein the work of *stamping out* has not proceeded so far as with us, and make inquiries of the owners. He will find numerous instances in which herds that were sound until the introduction of a new purchase, were infected by the new animal, and not only lost many of their number, but became centers of infection for adjacent herds. For any one acquainted with the facts to deny contagion, is simply to confess himself unable to sift evidence and reach truth. At Blissville distillery stables, after the owners had culled out all the diseased they knew of in anticipation of a State inspection, we had to condemn and send to the offal dock nearly one-tenth of all animals on the place. In the Prospect Park herd the disease prevailed last September, and we found that nearly all the cow stables in the neighborhood were infected later in the autumn. It was in this vicinity (Fifteenth Street) that I had the first cow slaughtered on February 8th, and several others have been lost in the same and adjacent stables since. New Lots we found to have been most extensively infected last autumn, and here too we have had to kill a number to stay the plague. In the vicinity of Mineola, Hempstead and Roslyn, we find that the disease existed most extensively last year as the result of the introduction of infected cattle, whereas already we have reason to believe there is scarcely a centre of infection remaining. The widest extension of the infection has always coincided with the mild season, (summer and autumn) when cattle run at pasture, and too often mingle freely

on commons and highways, and thereby infect each other.

The non-contagionists allege that the malady is due to inclement weather, exposure, etc., but facts are antagonistic to this theory, as no season furnishes fewer cases than winter and spring, when the weather is the most trying. But, during the winter and spring, the cattle are, for a long period, kept indoors or confined to fenced yards, so that the opportunities for infection passing from herd to herd are at their minimum. If the chances of contagion were as numerous in winter as in summer, there can be no doubt that the rigor of the season would increase the prevalence of the disease, but inasmuch as the cold and variable season which so strongly predisposes to all inflammatory lung diseases is that which presents the fewest cases, we must look for some other explanation which will not contradict the facts. This is to be found only in the increased facilities for contagion in summer, and the comparative absence of such facilities in winter.

All other facts in the history of the disease in America, lead to the same conclusion. It prevailed uninterruptedly in places, like the now memorable Blissville stables, where cattle were brought from all quarters and crowded together in a close building. As soon as a diseased animal was introduced, such a place was infected and remained so as long as occupied. Another grand source of the disease was the dealer's stable, and in the great majority of cases the infection of a herd in a new locality could be traced to one or more cows bought from a dealer. In short, wherever cattle were being constantly changed, and where there was the opportunity of the introduction into a stable of an infected beast, that stable became an infected place and a persistent source of new outbreaks wherever its inmates might be taken.

Nor can the unwholesome conditions of distillery stables on the one hand, nor the privations to which dealers' cattle are subjected on the other, be invoked as causes of the illness. Our western States are no more salubrious than those on the Atlantic sea-board, yet the distillery stables of the west develop no such baleful product, and the steers brought from the west, though they travel one hundred miles for every one traversed by the

New York dealer's cow, yet never fall victims to this disease nor propagate it among the native cattle when stopped fifty miles west of New York. The same is true of the western cows.

Professor William's letter is addressed to Mr. Laidlaw of Albany, and purports to be founded on information furnished by him. What right Mr. L. has to speak on the state of the Blissville cattle I know not, as he is not known to have been present at any *post mortem* there and could not well be without our permission. We do know, however, that he has written in the interest of a small clique of obstructives who testified in the public prints to *there not being a sick animal in the stables, and one of whom had been a student under himself*. This clique represented the "New York College of Veterinary Surgeons," Professor and Dr. Going and Professor Finlay. It not only "emphatically" denied the *pneumonia* theory, but as above quoted denied the existence of sickness altogether. It matters little to them apparently that Professor Spitzka whom they invited to accompany them says that "a thorough examination would neither be permitted nor was it desired," and further "that they found more diseased cattle, and far more intensely diseased individual cases, than Dr. Liantard, who examined the same cattle two or three days previous." As little does it seem to matter to this party that when present by permission at our first killing under the State authority at Blissville, they were invited to select any of the condemned animals for *post mortem* examination, they availed themselves of the offer, and found in the animal they supposed to be sound, the most perfect specimens of enlarged and consolidated lung, the result of pleuro-pneumonia.

A remark in Prof. Williams' letter seems to imply that he had been informed the lungs were *collapsed*. A *collapsed* lung is one with all the air expelled, so that the size of the organ is greatly diminished, its color changed to a dull red, and its weight unchanged. If slightly dropsical as well, the weight will be slightly increased and the color of a bluish red (splenization). If still more dropsical, the weight is greater, but the lung becomes clear and translucent, like liquid gelatine or frog's spawn. Now, in the lungs of the condemned cattle selected for examination by the

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Going Bros. and Finlay there was neither collapse nor translucency, but a great enlargement and consolidation, with a granular state of the cut surface, and the whole interspersed with the characteristic yellowish white markings. One set of lungs weighed before their eyes amounted to 26 lbs., in place of 3 or 4, as they would have been in health. The testimony to this is ample—professional and otherwise. From these facts may be inferred the reliability of the men who on this side of the Atlantic are seeking to obstruct a work which is as vital to our live stock interests at home as it is to our foreign cattle trade.

The two parties who have united their forces for this effort at obstruction seem to be about equally ignorant of the nature of evidence. "The New York College of Veterinary Surgeons," sitting quietly at their desks in this city, set forth in a report to the British consul that "*the disease under inspection by the Privy Council of Great Britain is not pleuro-pneumonia.*" On his part, Professor Williams, sitting in his easy chair in Edinburgh, Scotland, evolves from his own inner consciousness "*that the disease at Blissville is something very different from pleuro-pneumonia.*" Ordinary pathologists prefer to see the cases they pronounce upon, but to these eminent men an interval of 3,000 miles between physician and patient appears to be a decided advantage.

Williams' argument appears to be that the steers *ex* the "Ontario" which were killed at Liverpool, had not the contagious pleuro-pneumonia, therefore the cattle at Blissville had not. But the steers were shipped on the "Ontario," at Portland, Me., which port they reached by the Grand Trunk R. R. of Canada, so that they had never been within 300 miles of Blissville. The present attempt to connect the sick cattle on the "Ontario," with the sick at Blissville may mislead a careless or superficial reader, but to the considerate can only condemn its authors. Inasmuch as cattle are never carried from such a place as the Blissville stables westward, we might as logically deduce the nature of the cattle disease at Blissville from the known character of the present plague among the horned cattle of Turkey.

Without professing to decide as to the nature of the disease

affecting the cattle on the "Ontario," I will only add that neither from the observation of the fat cattle in our eastern stock-yards, nor from information furnished from the western States, have we any proof that contagious pleuro-pneumonia exists in the west. If, however, it is neglected now in the circumscribed eastern localities where it does exist, it will certainly reach the west sooner or later, and with most disastrous results.

As Prof. Williams has repeatedly lent his name to the obstructives on this side of the Atlantic, and as his letters have been heralded by statements that he was "the leading veterinary pathologist" and a "distinguished authority on such matters," I feel compelled, though very reluctantly to state some wholesome truths.

First, about the "Ontario" cattle, about which I have no dispute with any one, and will not be dragged into a controversy, having never seen them. Prof. Williams says "*EVERYBODY is surprised that such a gross mistake should have been made.*" Prof. Duguid, Veterinary Inspector-General, writes: "*PROFESSOR WILLIAMS WAS THE ONLY ONE who had any doubt about the nature of the disease; Professors McCall and Walley were quite satisfied that it was pleuro-pneumonia.*"

I shall not undertake the invidious task of comparing Prof. Williams with others as an author. But his present blameworthy course and the claims made for him by the would-be obstructives demand these statements:

1st. That when rinderpest invaded England in 1865, Williams, then practising in Yorkshire, strongly urged that it should be met by medicinal treatment, and thereby contributed as far as he could to the preservation of the sick, the increase and diffusion of the poison, and the exceptionally heavy losses that befel that county.

2d. That about two years ago Prof. Williams was convicted in a court of justice of having condemned a *consumptive* cow, under the impression that her disease was *pleuro-pneumonia*.

These truths can easily be proven by the public prints of the time, and while I profoundly regret the necessity for recalling them, I have been left with no alternative, as Prof. Williams

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persists in giving his countenance to the wrong, and in seeking adulation at the expense of one of the most valued industries of America. Yours, etc.,

JAMES LAW, F.R.C.V.S.

(*The New York Times* has so far failed to publish the above.)

POST MORTEM EXAMINATION OF COWS AFFECTED WITH PLEURO-PNEUMONIA.

By Prof. A. A. HOLCOMBE, D.V.S.

In Blissville, Long Island, February 21, 1879, under supervision of General Patrick, Prof. Law, aided by Drs. McLean and Bell, made post mortem examination upon three of the cows condemned to death from contagious pleuro-pneumonia. Subject No. 1 was a fine medium sized cow in good flesh, but presenting marked objective symptoms of the disease, the respiration being rapid, short and labored, the cough frequent and suppressed, and the temperature above 104.6° Fahrenheit. After destroying her life the left front leg and other muscular tissues were removed, the ribs cut across, and the left lung exposed. To one unacquainted with the characteristics of the specific form of pleuro-pneumonia, the conclusions would have been at once reached that there was an error in the diagnosis, for this lung presented a nearly, if not quite, normal appearance, but removing it and exposing the right lung there was seen to be an almost complete consolidation of the entire tissue, with extensive adhesions to the costal plura. The diaphragmatic pleura showed patches of effusion upon its surface.

Making a longitudinal section through the lung, the beautiful marbled appearance common to this disease was seen, with commencing suppuration in the parts farthest advanced in the diseased process; a peripheric lobule presented a marked, acute red infraction as the result of obliteration of the supplying nutritive artery. The pleural cavity contained but little effusion, while the pericardium was entirely devoid of lesions.

No. 2 was also a medium sized cow rather thin in flesh, with

a stiff gait, arched back, frequent cough, short rapid respirations, and marked auscultatory symptoms on both sides of the chest. The post mortem examination revealed the right lung in the first stage of the disease, it being marked upon the surface by congestion of the superficial veins and its consequent collateral œdema. The diaphragm was severely congested over a large part of its surface. The left lung was consolidated in nearly its entire extent, while the pleural adhesions were more limited than in the previous case. Section revealed the same internal appearance as in No. 1. The pericardium was thickened from effusion and covered in places with extensive exudation of coagulated lymph. Even after the escape of some of the serum from the points of incision, these lungs weighed twenty-six pounds.

No. 3, a small cow, in poor flesh, was the last subject for autopsy, and showed symptoms very similar in all respects to No. 2. The left lung when exposed was for the most part healthy, showing only some limited congestions. The costal pleura toward the inferior part of the chest was covered with considerable exudation. The right lung was about two-thirds consolidated and firmly attached to the costal pleura. The process in nearly half the consolidated part had reached such a stage that the tissue was beginning to break down. The unconsolidated tissues were marked with congestion.

VETERINARY COLLEGES.

COMMENCEMENT EXERCISES OF MONTREAL VETERINARY COLLEGE.

The examinations of the students of the College, which have been in progress during Monday, Tuesday and Wednesday, were concluded on Thursday by a public examination, in the presence of a large number of professors and friends, conducted by the following Board of Examiners, appointed by the Council of Agriculture, P. Q., viz.: Alex. Waddell, M.R.C.V.S., Quebec; Williamson Bryden, V.S., Boston; Noah Cressy, M.D., V.S., Ph.D.,

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Amherst, Mass.; Arch. McCormick, V.S., Beauharnois; A. O. F. Coleman, V.S., Ottawa; Chas. Levesque, V.S., Berthier en haut; C. J. Alloway, V.S., Montreal; A. J. Couture, V.S., Montreal; Dr. Tetu, Riviere Ouelle, P. Q.

The standard of examination was unusually high, and called for expressions of approbation from the whole Board, each student being highly complimented by the examiners on each subject.

The following students, who had fulfilled the full *curriculum* and passed satisfactory written examinations, were examined by the whole Board orally, and having given satisfactory evidence of their proficiency, were admitted as members of the profession, viz.: Isaac J. Miles, Charleston, Illinois; W. L. Williams, Argenta, Illinois, Floret S. Thomas, M.D., Hanson, Mass.; H. D. McMartin, Montreal; Charles Winslow, Rockland, Mass.; D. Lemay, Bord a Plouff, P. Q.; M. C. Baker, Dunham, P. Q. French department—Victor Theodule Daubigny, Lachenaie, P. Q.; Henri Audrain, Montreal; Alphonse Levesque, Montreal; Hector Bergevin, St. Timothe, P. Q.

At five o'clock a large assemblage of professional gentlemen, prominent citizens, and the majority of the members of the Council of Agriculture, assembled in the lecture room of the College, to witness the distribution of the prizes and the conferring of the diplomas. Among those present we noticed Hon. G. Ouimet, Commissioner of Public Instruction, P. Q.; Hon. S. Norquay, Premier of Manitoba; Hon. L. H. Beaubien, Rev. Father Pilot, W. W. Ogilvie, Esq., Professors Craik, Osler and Bell, etc. Letters of regret for unavoidable absence were received from Hon. H. G. Joly, Premier of Quebec; Professor J. W. Dawson, Principal of McGill University; L. H. Massue, Esq., M.P., President of the Council of Agriculture; Hon. M. H. Cochrane and others.

The Hon. G. Ouimet occupied the chair, and presented the prizes and diplomas, afterwards addressing the pupils, congratulating them and giving them advice as to their future careers.

Appropriate addresses were also made by Mr. Waddell, Professor Cressy, Dr. Tetu, Hon. L. H. Beaubien, E. A. Barnard, Esq., Director of Agriculture, Rev. Father Pilot, and others.

COMMENCEMENT EXERCISES OF TORONTO VETERINARY COLLEGE.*

For the past week the annual examinations of the Ontario Veterinary College have been in progress, and yesterday the results were made public, when the prizes were presented to the successful competitors by His Honor the Lieutenant-Governor, in the College Museum.

A large number of persons interested in the school were present by invitation to witness the closing exercises. Among these were His Honor Lieutenant-Governor Macdonald; Hon. Adam Crooks, Minister of Education; Hon. A. S. Hardy, Provincial Secretary; Hon. S. C. Wood, Minister of Agriculture and Provincial Treasurer; Professor Buckland; Dr. Thorburn; Dr. Coleman, V.S., of Ottawa; Dr. E. A. A. Grange, V.S., of Guelph; and other prominent veterinary practitioners from different parts of the Province.

After an inspection of the premises, which were found in the most perfect order and showing marked evidences of the most scrupulous neatness and good taste on the part of those in charge, the party adjourned to the museum.

Dr. Smith, President of the College, occupied the chair. His Honor the Lieutenant-Governor was seated on his right, and Hon. S. C. Wood on his left.

After some remarks briefly made by Prof. Buckland, tracing the progress of the institution to the present time, the following gentlemen were successful in passing their final examinations, and received their degree: H. Ackerill, Belleville; J. Armstrong, Bayfield, Ont; G. Bateman, Port Perry; E. W. Bartram, Ovid, Mich; E. A. Blackwell, London, Ont; H. Butcher, Trafalgar, Ont; K. H. Cleaver, Allentown, Pa; G. W. Coppis, Madisonburg, Indiana; T. Fisher, Georgetown; S. J. Foelker, Allentown, Pa; T. W. Foster, Belleville, Ont; O. B. French, East Bloomfield; J. H. Frink, St. John, N. B.; J. E. Gemmel, Toronto; Neil Grant, Sombra; Chas. Green, Richmond, Ill; Fred Green-side, Guelph; F. J. Hammil, Keenansville, Ont; J. H. Hickenberger, Catasauqua, Pa; Jas. Massie, Smith's Falls; Chas. Mathews, Brougham, York; F. W. Mathews, Toronto; F. W.

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McDonagh, Goderich; N. McNally, Houston, Texas; J. H. Miller, Wadsworth, Ohio; J. C. Milnes, Cedar Rapids, Mich; E. C. Oliver, Claude, Ont; E. Prentice, Chicago; W. Rose, Durham; J. G. Rutherford, Peeblesshire, Scotland; John Stephen, Collingwood; B. White, Whitby.

The following gentlemen constituted the Board of Examiners: Mr. Cowan, Galt; Mr. Coleman, Ottawa; Mr. Cæsar, Port Hope; Mr. Duncan, Goderich; Mr. McNaught, Seaforth; Mr. Wilson, London; and Dr. Thorburn. The Board was assisted by several other gentlemen, graduates of the College, who were present as visitors.

After the presentations had been made, His Honor the Lieutenant-Governor complimented the prize-winners. Although he did not profess to have a knowledge of veterinary science, yet as a Canadian he took an interest in its progress, and expressed his willingness to forward the interests of the institution in any way he could. Hon. Adam Crooks also delivered an address, after which the audience dispersed.

*Extracts from the Toronto Globe.

REPORT OF CASE.

TORSION OF THE UTERUS IN A MARE.

COLUMBUS, OHIO,
MARCH 22d, 1879. }

Editor of Veterinary Review :—

A valuable mare at the end of the ninth month of gestation was recently observed by her owner to be suffering severely from colic. She was incessantly pawing, kicking at the belly, looking round at the flanks, lying down and rolling; there was also the frequent evacuation of small quantities of hardened fæces and ineffectual attempts at micturition. The services of Dr. Rose of this city, a successful veterinarian in large practice were obtained; an anodyne was administered and this was followed by a cathar-

tic: the anodyne quieted the mare to some extent, but the cathartic produced no manifest effect. When the doctor first saw the mare, he remarked that her behavior reminded him of a case of *torsion of the uterus* that had previously come under his notice; and this suspicion would at once have been verified by an examination per vaginum but for an objection made by the owner that possibly such interference might excite uterine contraction and result in the loss of the colt. The mare continued sick and the constipation was not relieved although castor oil, backraking, warm water injections and aloes were successively employed. At the end of a week, the mare broke from her stable, walked a couple of miles, laid down and died.

The post mortem showed but little tympanitis and no disease of the bowels, the uterus contained a large foetus, and several pints of fluid blood. When the contents of the uterus had been removed it was plainly seen that the whole organ had been rolled over, the place of twist being at the junction of the vagina and uterus. The suspensory ligaments of the uterus between which the rectum passes were so tightened by the torsion that an absolute obstruction of the intestine had been produced, and hence the failure of cathartics. Anterior to the obstruction was an accumulation of faecal matter.

Is it not probable that such cases are more frequent than has heretofore been supposed? This is the third case that has come to the knowledge of the writer and the second that has come under his immediate notice. The diagnosis is easily made by examination per vaginum and per rectum; it should be made early in order to determine by what means a biable colt shall be saved.

N. S. TOWNSEND.

IN THE AMPHITHEATRE OF THE DEAD.—A prosector of anatomy, speaking to the professor in the dissecting room, said: "Sir, there are no more bodies in the dead-room." "I know it," answered the professor. "I distributed twenty subjects yesterday." "Oh," said the prosector, "some must be brought in, *it looks so sad without any.*"